#2020/11/13(五), 109 學年第一學期 資料科學應用 R 作業(3)
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```
> #ex1.25(a)
> library(readxl)
> q1 <- read_excel("data/R-score.xlsx", skip = 1)
New names:
* `0.15` -> `0.15...6`
* `0.15` -> `0.15...7`
> names(q1) <- c("NO", "系級", "學號", "姓名", "小考(1)", "小考(2)", "小考(3)", "作業", "期末考", "點名")
> head(q1, 5)
# A tibble: 5 x 10
     NO 系級     學號 姓名  `小考(1)` `小考(2)` `小考(3)` 作業 期末考
  <dbl> <chr>   <dbl> <chr>     <dbl>     <dbl>     <dbl> <dbl>  <dbl>
1     1 統計系 1~ 3.26e7 周小如~      55        95       100   100
86
2     2 統計系 1~ 3.26e7 周抒如~      30        65        70   100
94
3     3 會計系 1~ 3.26e7 林育安~      10         5        25    10
77
4     4 會計系 1~ 3.26e7 林育辰~      10        20        45    40
87
5     5 會計系 1~ 3.26e7 黃季晴~       5        15        20    25
86
# ... with 1 more variable: 點名 <dbl>
> #ex1.25(b)
> mean(q1$"小考(1)")
[1] 25
> sd(q1$"小考(1)")
[1] 18.37117
> mean(q1$"小考(2)")
[1] 36.15385
> sd(q1$"小考(2)")
[1] 33.05008
> mean(q1$"小考(3)")
[1] 51.15385
> sd(q1$"小考(3)")
[1] 26.7047
```

```
> #ex1.25(c)
> q1$"學期成績" <- (0.1*q1$"小考(1)" + 0.15*q1$"小考(2)" + 0.15*q1$"小考(3)" +
0.2*q1$"作業" + 0.4*q1$"期末考")
> q2 <- data.frame("學號" = q1$"學號", "學期成績" = q1$"學期成績")
> print(q2)
         學號  學期成績
1    32578012       89.15
2    32578014       80.85
3    32578016       38.30
4    32578018       53.55
5    32578020       45.15
6    32578022       46.05
7    32578026       62.80
8    32578028       75.10
9    32578030       57.30
10 32474226       46.15
11 32475032       36.95
12 32578002       85.75
13 32578004       20.25
> #ex1.29(a)
> r1 <- read_excel("data/R-score.xlsx", skip = 1)
New names:
* `0.15` -> `0.15...6`
* `0.15` -> `0.15...7`
> names(r1) <- c("NO", "系級", "學號", "姓名", "小考(1)", "小考(2)", "小考(3)", "作
業", "期末考", "點名")
> head(r1, 5)
# A tibble: 5 x 10
      NO  系級       學號  姓名    `小考(1)` `小考(2)` `小考(3)`   作業  期末考
   <dbl> <chr>     <dbl> <chr>         <dbl>       <dbl>       <dbl> <dbl>    <dbl>
1       1  統計系 1~ 3.26e7  周小如~            55          95           100      100
86
2       2  統計系 1~ 3.26e7  周抒如~            30          65            70      100
94
3       3  會計系 1~ 3.26e7  林育安~            10           5            25       10
77
4       4  會計系 1~ 3.26e7  林育辰~            10          20            45       40
87
```

```
5        5 會計系 1~ 3.26e7 黃季晴~              5             15             20       25
86
# ... with 1 more variable: 點名 <dbl>
> tail(r1, 5)
# A tibble: 5 x 10
      NO 系級       學號 姓名  `小考(1)` `小考(2)` `小考(3)`  作業 期末考
   <dbl> <chr>    <dbl> <chr>        <dbl>       <dbl>       <dbl> <dbl>   <dbl>
1       9 統計系 1~ 3.26e7 黎奕璇~             10             15             55       55
87
2      10 會計系 1~ 3.25e7 蕭偲賢~             15              5             30       45
76
3      11 會計系 1~ 3.25e7 謝涵融~             35             10              5        0
78
4      12 會計系 1~ 3.26e7 羅順霓~             50            100             65      100
90
5      13 統計系 1~ 3.26e7 顧瀚薇~             15             10             75       30
0
# ... with 1 more variable: 點名 <dbl>
> #ex1.29(b)
> r2 <- read.table("data/20140714-weather.txt", header = TRUE, sep = "\t", na =
"A0A9M0")
> r2$stationId <- as.numeric(r2$stationId)
> head(r2, 5)
  locationName      lat      lon stationId TEMP ELEV
1         基隆 25.1348 121.7321    466940 29.1   27
2         淡水 25.1656 121.4400    466900 28.5   19
3         板橋 24.9993 121.4338    466880 29.0   10
4       竹子湖 25.1650 121.5363    466930 25.2  607
5         新竹 24.8300 121.0061    467571 29.8   34
> tail(r2, 5)
   locationName      lat      lon stationId TEMP ELEV
25         臺北 25.0396 121.5067    466920 30.4    5
26         臺南 22.9952 120.1970    467410 30.0   41
27         金門 24.4074 118.2893    467110 28.4   48
28         馬祖 26.1694 119.9232    467990 28.0   98
29         新屋 25.0067 121.0475    467050 29.3   21
> #ex1.29(c)
> r3 <- read.csv("data/weather_delays14.csv", header = TRUE)
```

```
> head(r3, 5)
   year month day dep_time arr_time carrier tailnum flight origin dest
1 2014     1   1     1733     2024      AA  N3HPAA    199    JFK
ORD
2 2014     1   1     1718     1840      B6  N324JB   1734    JFK  BTV
3 2014     1   1      624      946      DL  N3751B    479    JFK  ATL
4 2014     1   1      910     1203      DL  N910DL   1174    LGA  PBI
5 2014     1   1     1850     2052      MQ  N1EAMQ   2839    LGA
STL
   carrier_delay weather_delay nas_delay aircraft_delay
1              0             7        51              11
2              0            18         6               0
3              0             9        45               0
4              0            52         0               0
5              0            35        12               0
> tail(r3, 5)
      year month day dep_time arr_time carrier tailnum flight origin dest
4655 2014    10  26     1135     1451      VX  N836VA    409    JFK
LAX
4656 2014    10  27     1042     1416      VX  N642VA    187    EWR
SFO
4657 2014    10  29     1507     1808      DL  N321NB   1923    LGA
MIA
4658 2014    10  31     1500     1751      DL  N338NB   1685    LGA
MCO
4659 2014    10  31     1323     1502      AA  N3KNAA    329    LGA
ORD
      carrier_delay weather_delay nas_delay aircraft_delay
4655             5            11         0              0
4656            12             9         0              0
4657             0            81         0              0
4658             0            28         0              0
4659             0           113         4              0
> #ex2.10
> score <- sample(1:100, 50, replace = TRUE)
> if(any(score >= 95)){
+     cat("老師請同學吃飯")
+     }else{cat("老師很生氣")}
```

老師請同學吃飯

```
> #ex2.21(a)
> s1 <- read.csv("data/score02.csv", header = TRUE)
> names(s1) <- c("學號", "期中考", "期末考")
> head(s1, 7)
        學號  期中考  期末考
1 410072106      80      60
2 410073023      50      73
3 410079062      45      35
4 410079090      77      54
5 410079118      62      54
6 410079120      67      45
7 410079121      72      78
> #ex2.21(b)
> names(s1) <- c("id", "mid", "final")
> print(s1)
          id mid final
1  410072106  80    60
2  410073023  50    73
3  410079062  45    35
4  410079090  77    54
5  410079118  62    54
6  410079120  67    45
7  410079121  72    78
8  410172016  62    75
9  410172027  82    95
10 410172103  92    66
11 410173029  42    11
12 410173072  55    73
13 410173101  82    64
14 410173134  92    78
15 410173135 100    55
16 410173136  80    88
17 410174210  50    63
18 410183004  95    90
19 410183012  67    35
20 410184012  75    16
21 410184015  52    45
```

22	410273002	100	25
23	410273004	99	56
24	410273005	60	55
25	410273007	100	76
26	410273010	72	40
27	410273011	55	45
28	410273014	45	57
29	410273016	62	100
30	410273018	100	25
31	410273019	70	67
32	410273020	95	55
33	410273024	75	55
34	410273031	85	68
35	410273032	75	64
36	410273034	70	47
37	410273040	67	56
38	410273041	57	28
39	410273042	70	85
40	410273048	52	62
41	410273049	72	40
42	410273050	57	42
43	410273051	47	6
44	410273057	80	70
45	410273060	50	40
46	410273062	60	76
47	410273065	85	70
48	410273067	70	86
49	410273069	82	65
50	410273070	100	72
51	410273073	75	88
52	410273075	87	40
53	410273076	47	75
54	410273081	90	31
55	410273094	100	8
56	410273095	90	64
57	410273096	87	70
58	410273102	100	100
59	410273105	85	52

```
60 410273106    80        71
61 410273108    90        94
62 410273109    90        80
63 410273110    87        87
64 410273116    82       100
65 410275001    61         9
66 410275005    92        73
67 410275015    52        43
68 410275016    55        60
69 410275017    57        47
70 410275020    95        81
71 410275029    79        93
72 410275032    85        33
73 410275033    60        29
74 410275034    85        81
75 410275036    72        26
76 410275040    70        57
77 410275051    35        90
78 410275055    85        53
79 410275058 100       100
80 410279001 100         48
81 410279006    32        14
82 410279018    47        55
83 410279021    42        32
84 410279039    90        41
85 410279049    47        60
86 410279054    32        54
87 410279063    72        82
88 410279075    38        90
89 410279080    90        36
90    49973086    82        76
91    49979003    85        25
92    49979046    82        55
93    49981006    82        55
94    49981011    95        98
> #ex2.21(c)
> s2 <- s1$id[s1$final > s1$mid]
> print(s2)
```

```
 [1] 410073023 410079121 410172016 410172027 410173072 410173136
410174210
 [8] 410273014 410273016 410273042 410273048 410273062 410273067
410273073
[15] 410273076 410273108 410273116 410275016 410275029 410275051
410279018
[22] 410279049 410279054 410279063 410279075    49981011
> #ex2.21(d)
> length(s1$id[s1$mid >= 60    & s1$final >= 60])
[1] 38
> length(s1$id[s1$mid >= 60    & s1$final < 60])
[1] 32
> length(s1$id[s1$mid < 60    & s1$final >= 60])
[1] 9
> length(s1$id[s1$mid < 60    & s1$final < 60])
[1] 15
> #ex2.21(e)
> a <- (0.5*s1$"mid" + 0.5*s1$"final")
> rev(sort(a))
 [1] 100.0 100.0  96.5  92.5  92.0  91.0  88.5  88.0  88.0  87.0  86.0
[12]  86.0  85.0  85.0  84.0  83.0  82.5  81.5  81.0  79.0  79.0  78.5
[23]  78.0  77.5  77.5  77.5  77.5  77.0  77.0  76.5  75.5  75.0  75.0
[34]  75.0  74.0  73.5  73.0  70.0  69.5  69.0  68.5  68.5  68.5  68.5
[45]  68.5  68.0  65.5  65.5  65.0  64.0  64.0  63.5  63.5  63.0  62.5
[56]  62.5  62.5  61.5  61.5  61.0  60.5  59.0  58.5  58.0  57.5  57.5
[67]  57.0  56.5  56.0  56.0  56.0  55.0  54.0  53.5  52.0  51.0  51.0
[78]  51.0  50.0  49.5  49.0  48.5  47.5  45.5  45.0  44.5  43.0  42.5
[89]  40.0  37.0  35.0  26.5  26.5  23.0
```